

## **Electrochemical sample preparation for the enzymatic determination of cholinesterase inhibitors**

Evtyugin G., Stoikova E., Iskanderov R., Nikol'skaya E., Budnikov G.

*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

---

### **Abstract**

An electrochemical sample preparation procedure for the enzymatic determination of thione organophosphorus pesticides has been examined. This procedure is based on the galvanostatic electrolysis of thione pesticides in the presence of chlorides or bromides, in which the pesticides are oxidized to oxygen analogs. The efficiency of sample preparation depends on the halogen nature. The kinetic studies have shown that, in the case of bromides, the subsequent determination with a native enzyme (colorimetric detection) is complicated by the mixed character of inhibition. The presence of a reversible component is caused by the presence of the residual unoxidized pesticide. With the use of cholinesterase immobilized on paper (a potentiometric biosensor), only the effect of an irreversible inhibitor (the major product of electrochemical pesticide oxidation) is observed, regardless of the nature of the oxidants generated. © 1997 MAEe cyrillic signK Hayka/Interperiodica Publishing.

---